ALTERATION PROCESSES IN THE MESOZOIC ISLAND ARC VOLCANICS FROM THE TRASCĂU MOUNTAINS (ROMANIA)

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In the eastern part of the Apuseni Mountains (Romania), Mesozoic island arc volcanics occur. Tectonically, they are part of the Bedeleu Nappe (BALINTONI & IANCU, 1986) and have on the top Oxfordian–Tithonian radiolarites and limestones and, in places, post-tectonic Miocene sediments. The volcanic sequence is Middle to Late Jurassic in age and is not genetically related with ophiolites from the southern parts of the Apuseni Mts. (SACCANI *et al.*, 2001). In the Buru–Borzeşti–Corneşti area (Trascău Mountains, north of Arieş Valley), the island arc volcanics show a wide range of rocks such as basalts, basaltic andesites, andesites, dacites and rhyolites. They form massive or pillowed lava flows, dykes or pyroclastic deposits, *e.g.* agglomerates, breccias and tuffs.

Basalts and basaltic andesites have a dark green, almost black colour and form massive or pillowed lavas. The porphyritic fabric is expressed by olivine, augite and plagioclase ($An_{50–90}$ and $An_{45–80}$, respectively) phenocrysts, in intergranular or pilotaxitic groundmass, sometimes containing small vacuoles filled in with calcite, quartz and/or chlorite. Andesites have greyish-greenish colour and form massive lava flows. The structure is glomeroporphyritic, with clusters of plagioclase ($An_{40–60}$) and isolated phenocrysts of augite, ferrohornblende and quartz. The groundmass has microcrystalline to pilotaxitic fabric. Dacites and rhyolites are rare and form small, isolated dykes with porphyritic or aphyric fabric.

The pyroclastites, represented by layers of andesitic agglomerates and breccias, andesitic lapilli tuffs and vitroclastic rhyolitic tuffs, interbedded with massive lava flows or pillow lavas levels, are the prevalent rocks in the studied area.

The above-described volcanic rocks exhibit different degrees of hydrothermal alteration, which affected mainly clinopyroxene and plagioclase phenocrysts and the glassy groundmass. Clinopyroxenes (augite) are partly or completely altered and transformed into clinochlore. Plagioclase occurs either in fresh crystals or is partly replaced by a mixture of albite, calcite and illite. The groundmass exhibits much more intense alteration processes, expressed by the presence of clinochlore, smectite, calcite, fibrous microquartz (chalcedony) and pyrite.

The andesitic agglomerates, breccias and lapilli tuffs exhibit advanced hydrothermal alteration, which affected less the clasts and mainly the matrix, in general almost completely transformed into clinochlore, smectites and calcite. The rhyolitic vitroclastic tuffs are completely replaced by smectites and form deposits of bentonites.

The hydrothermal alteration of the Mesozoic volcanics from the Trascău Mountains can be assigned to the activity of the postmagmatic fluids.

References

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